

ATTACHMENT K

Attachment K.

The annual charge factor (ACF) calculation in the CCFactor tab in both expense modules is flawed because of the way net salvage is taken into account. The net salvage is used to adjust the economic lives while selecting the appropriate ACF instead of using it explicitly in the ACF calculations. This gives rise to errors as explained below.

The ACF (CCCFactor) consists of two parts, the depreciation factor (DeprecFact) and the tax grossed up rate of return factor (GrUpRORFact). For the depreciation factor the procedure followed, although flawed, would produce the correct factor when straight line depreciation is used, as the error gets canceled in the process of levelization. However, for the rate of return factor, the methodology flaw produces an incorrect factor. The following example illustrates the error:

DeprecLife	8 Years		10 Years	
	(20% Salvage)	(0% Salvage)	(0% Salvage)	(0% Salvage)
CCCFact	0.19293		0.18265	
DeprecFact	0.10023		0.10023	
GrUpRORFact	0.09270		0.08242	

In this example we consider an investment that has an economic life of 8 years and a net salvage of 20% at the end of its economic life using straight line depreciation and a weighted average cost of capital of 10.01%. The first column contains the factors that would be produced by the correct procedure while the second column contains the factors that the FCC Model produces.

In the depreciation factor calculation, the correct procedure would require that for each \$1 of investment, \$0.1 per year [= $\$1 * (1 - \text{net salvage})/\text{life}$] be set aside for depreciation purposes so as to get back the cost of all unrecoverable investment at the end of 8 years. The FCC Model instead calculates an adjusted economic life of 10 years [= $\text{life}/(1 - \text{net salvage})$] that includes the effect of net salvage. For depreciation purposes, the FCC Model uses this adjusted economic life and assumes 0% net salvage with that adjusted life. In the process, the FCC Model also sets aside \$0.1 per year [= $\$1/\text{adjusted life}$] for depreciation. Both procedures recover the full investment, the difference being while the correct procedure provides for recovery over 8 years, the FCC Model spreads over 10 years.

If the timing of recovery were not of concern, the two procedures would yield identical results. However, the timing of recovery is taken into account while calculating the depreciation charge factor by first calculating the net present value (NPV) of the annual depreciation set asides and then leveling the NPV using a leveling factor. Because of the differences in timing, the NPV in the two procedures would be different. Despite this, the depreciation factor calculated by both procedures is identical (=0.10023) since in the case of straight line depreciation where equal amounts are set aside each year, the NPV factor and the leveling factor cancel each other. This would not be the case for a depreciation procedure that provides for unequal amounts over the years (e.g., accelerated depreciation). Under such a scenario, the NPV factor and the leveling

factor would not cancel each other, and the depreciation factor produced by the correct procedure would not be the same as that produced by the model.

A comparison of the GrUpRORFact results in the table above showed that the results produced by the two procedures are quite different. This is because the rate of return in each year is calculated based on net investment. As the depreciation schedule is different for the two procedures, the rate of return factor would also turn out to be different. This would occur even for straight line depreciation. In the above example, the FCC Model would lower net investment by \$0.1 for each \$1 of investment over 10 years while in the correct procedure the same lowering would occur only over an 8 year period, the balance \$0.2 being recovered from net salvage at the end of 8 years. Thus, in the above example after using NPV and levelization process we would get a ROR factor of 0.08242 using the FCC Model methodology while the correct factor should have been 0.09270.

The ACF (CCCFact) in the table above is the sum of the DeprecFact and the GrUpRORFact. The ACF is used to calculate the capital cost associated with each category of investment. Since the FCC Model uses an incorrect ACF as explained above, the costs produced by the Model are incorrect.

ATTACHMENT L

Attachment L. Operating taxes are calculated in the Model either based on costs other than overhead and customer operations costs or on a per line basis. In actual practice, operating taxes are levied either on revenue or on investment. There is no methodological justification for the FCC Model to depart from current practice.

For the portion of operating taxes based on revenue, costs produced by the Model may be used in place of revenue for calculating operating taxes, but it should be all costs. Thus it should include overhead and customer operation costs as well. Leaving out overhead and customer operation costs from the tax base improperly underestimates the operating taxes.

A suggested formula change in cell C70 of the Exp Assignment Tab in the Wire Center expense module for including overhead costs and customer operation expenses in the calculation is as follows

Existing Formula = $(C68/(1\cdot'96\ Actuals'\$F\$139))-C68$

Proposed Formula =

$$((C68+('PerLine'\$C\$33+('Inputs'\$C\$50+'Inputs'\$C\$51+'Inputs'\$C\$57)*12)*'Investment Input'\!B3)/(1\cdot'96\ Actuals'\$F\$139))-(C68+('PerLine'\$C\$33+('Inputs'\$C\$50+'Inputs'\$C\$51+'Inputs'\$C\$57)*12)*'Investment Input'\!B3)$$

Where:

C68 = Total Direct Costs + Total Network Operations+ Total General Support

'96 Actuals'\\$F\\$139 = Operating Other Taxes

'PerLine'\\$C\\$33 = Per-Loop Expense Amounts for Variable Overhead

'Inputs'\\$C\\$50 = billing/bill inquiry per line per month

'Inputs'\\$C\\$51 = directory listing per line per month

'Inputs'\\$C\\$57 = per-line monthly LNP cost

'Investment Input'\!B3 = Total lines

ATTACHMENT M1

Attachment M1.

A suggested formula change in cell CV3 of the Investment Input Tab in the Wire Center expense module for using a composite Cable Maintenance Factor for Copper Cable is as follows

Existing Formula=(AG3*((1-(Inputs!\$K\$25-
TRUNC(Inputs!\$K\$25)))*INDEX(CCCFact,1,TRUNC(Inputs!\$K\$25))+
(Inputs!\$K\$25-
TRUNC(Inputs!\$K\$25))*INDEX(CCCFact,1,1+TRUNC(Inputs!\$K\$25))))+(AG3*'96
Actuals'!\$I\$45)

Proposed Formula=(AG3*((1-(Inputs!\$K\$25-
TRUNC(Inputs!\$K\$25)))*INDEX(CCCFact,1,TRUNC(Inputs!\$K\$25))+
(Inputs!\$K\$25-
TRUNC(Inputs!\$K\$25))*INDEX(CCCFact,1,1+TRUNC(Inputs!\$K\$25))))+
(AG3*(('96 Actuals'!\$I\$44) * (SUM('Investment Input'!K:K)+SUM('Investment
Input'!X:X)))+('96 Actuals'!\$I\$45) * (SUM('Investment Input'!I:I)+SUM('Investment
Input'!V:V)))+('96 Actuals'!\$I\$46)
*(SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W)))
/(SUM('Investment Input'!K:X)+SUM('Investment Input'!V:W))
+SUM('Investment Input'!I:J)+SUM('Investment Input'!V:V)
+SUM('Investment Input'!H:I)+SUM('Investment Input'!W:W)))

Where:

AG3 = SAI investment (pasted from loop module)

Inputs!\$K\$25 = Adjusted projection life (years) for NID & SAI

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

'96 Actuals'!\$I\$45 = Alternative Cable Maintenance Factor for Copper Underground
Cable

'96 Actuals'!\$I\$44 = Alternative Cable Maintenance Factor for Copper Aerial Cable

'96 Actuals'!\$I\$46 = Alternative Cable Maintenance Factor for Copper Buried Cable

'Investment Input'!K = copper feeder cable aerial Investment

'Investment Input'!X = Distribution cable aerial Investment

'Investment Input'!J = copper feeder cable buried Investment

'Investment Input'!W = Distribution cable buried Investment

'Investment Input'!I = copper feeder cable underground Investment

'Investment Input'!V = Distribution cable underground Investment

ATTACHMENT M2

Attachment M2.

A suggested formula change in cell DH3 of the Investment Input Tab in the Wire Center expense module for using a Cable Maintenance Factor for underground Copper and Fiber Cable in underground feeder placement expense is as follows

Existing Formula = $(O3*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!K35))+Inputs!K35-TRUNC(Inputs!K35))*INDEX(CCCFact,1,1+TRUNC(Inputs!K35)))+((O3+Q3+R3)*'96 Actuals'!F51)$

Proposed Formula= $(O3*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!K35))+Inputs!K35-TRUNC(Inputs!K35))*INDEX(CCCFact,1,1+TRUNC(Inputs!K35)))+((O3*'96 Actuals'!F51)+(Q3*'96 Actuals'!I45)+(R3*'96 Actuals'!H45))$

Where:

O3= feeder conduit (pasted from loop module)

Q3 = copper feeder underground placement (pasted from loop module)

R3 = fiber feeder underground placement (pasted from loop module)

Inputs!\$K\$35 = Adjusted projection life (years) for Conduit Systems

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

Inputs!\$G\$70 = structure fraction assign. to telephone for undgd. feeder: density zone 650-850

'96 Actuals'!\$F\$51 = ARMIS Expense to Investment Factor for Conduit Systems

'96 Actuals'!\$I\$45 = Alternative Cable Maintenance Factor for Copper Underground Cable

'96 Actuals'!\$H\$45 = Alternative Cable Maintenance Factor for Fiber Underground Cable

ATTACHMENT M3

GTE
FCC Universal Service Cost Model Issues

Attachment M3.

A suggested formula change in cell DM3 of the Investment Input Tab in the Wire Center expense module for using a composite life for MDF/Protector is as follows

Existing Formula =
(AO3*((1-(Inputs!\$K\$23)-
TRUNC(Inputs!\$K\$23)))*INDEX(CCCFact,1,TRUNC(Inputs!\$K\$23))+
(Inputs!\$K\$23-
TRUNC(Inputs!\$K\$23))*INDEX(CCCFact,1,1+TRUNC(Inputs!\$K\$23)))+(AO3*'96
Actuals'!\$H\$19)

Proposed Formula: Instead of Inputs!\$K\$23 we should use
(Inputs!\$K\$37 * (SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X) +
SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V) +SUM('Investment
Input'!J:J)+SUM('Investment Input'!W:W))+ (Inputs!\$K\$38 * (SUM('Investment
Input'!N:N)+SUM('Investment Input'!AZ:AZ)+SUM('Investment
Input'!BG:BG)+SUM('Investment Input'!BN:BN)+ SUM('Investment
Input'!L:L)+SUM('Investment Input'!AX:AX)+SUM('Investment
Input'!BE:BE)+SUM('Investment Input'!BL:BL)+ SUM('Investment
Input'!M:M)+SUM('Investment Input'!AY:AY)+SUM('Investment
Input'!BF:BF)+SUM('Investment Input'!BM:BM))+ (Inputs!\$K\$23* SUM('Investment
Input'!AN:AN))
(SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X) + SUM('Investment
Input'!I:I)+SUM('Investment Input'!V:V) +SUM('Investment
Input'!J:J)+SUM('Investment Input'!W:W)+ SUM('Investment
Input'!N:N)+SUM('Investment Input'!AZ:AZ)+SUM('Investment
Input'!BG:BG)+SUM('Investment Input'!BN:BN)+ SUM('Investment
Input'!L:L)+SUM('Investment Input'!AX:AX)+SUM('Investment
Input'!BE:BE)+SUM('Investment Input'!BL:BL)+ SUM('Investment
Input'!M:M)+SUM('Investment Input'!AY:AY)+SUM('Investment
Input'!BF:BF)+SUM('Investment Input'!BM:BM)+SUM('Investment Input'!AN:AN))

Where:

AO3 = MDF / protector investment (pasted values)

Inputs!\$K\$23 = Adjusted projection life (years) for Digital Circuit Equipment

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

'96 Actuals'!\$H\$19 = alternative CO switching factor

Inputs!\$K\$37 = Life for Average Metallic Cable (calculated)

Inputs!\$K\$38 = Life for Average Non Metallic Cable (calculated)

'Investment Input'!K = copper feeder cable aerial Investment

'Investment Input'!X = Distribution cable aerial Investment

'Investment Input'!J = copper feeder cable buried Investment

'Investment Input'!W = Distribution cable buried Investment

'Investment Input'!I = copper feeder cable underground Investment

'Investment Input'!V = Distribution cable underground Investment

'Investment Input'!N = fiber feeder cable aerial Investment

'Investment Input'!AZ = Common transport aerial Investment

'Investment Input'!BG = direct transport, aerial Investment
'Investment Input'!BN = dedicated transport, aerial Investment
'Investment Input'!L = fiber feeder cable underground Investment
'Investment Input'!AX = common transport, underground Investment
'Investment Input'!BE = direct transport, underground Investment
'Investment Input'!BL = dedicated transport, underground Investment
'Investment Input'!M = fiber feeder cable buried Investment
'Investment Input'!AY = common transport, buried Investment
'Investment Input'!BF = direct transport, buried Investment
'Investment Input'!BM = dedicated transport buried Investment
'Investment Input'!AN = End office switching Investment

ATTACHMENT N1

GTE
FCC Universal Service Cost Model Issues

Attachment N1.

A suggested formula change in cells CP3 and CR3 of the Investment Input Tab in the Wire Center expense module for using a composite life are as follows

Existing Formula in Cell CP3=(AI3*((1-(Inputs!\$K\$37-TRUNC(Inputs!\$K\$37)))*INDEX(CCCFact,1,TRUNC(Inputs!\$K\$37))+(Inputs!\$K\$37-TRUNC(Inputs!\$K\$37))*INDEX(CCCFact,1,1+TRUNC(Inputs!\$K\$37))))+(AI3*'96 Actuals'!\$F\$52)

Existing Formula in Cell CR3=AH3*((1-(Inputs!\$K\$25-TRUNC(Inputs!\$K\$25)))*INDEX(CCCFact,1,TRUNC(Inputs!\$K\$25))+(Inputs!\$K\$25-TRUNC(Inputs!\$K\$25))*INDEX(CCCFact,1,1+TRUNC(Inputs!\$K\$25))))+(AH3*'96 Actuals'!\$F\$52)

Proposed Formula: Instead of Inputs!\$K\$25 or Inputs!\$K\$37 in the above formulae we should use

$$\begin{aligned} & ((\text{Inputs!K27} * (\text{SUM('Investment Input'!K:K)} + \text{SUM('Investment Input'!X:X)})) + \\ & \text{Inputs!K29} * (\text{SUM('Investment Input'!I:I)} + \text{SUM('Investment Input'!V:V)})) + \\ & (\text{Inputs!K31} * (\text{SUM('Investment Input'!J:J)} + \text{SUM('Investment Input'!W:W)})) \\ & /(\text{SUM('Investment Input'!K:K)} + \text{SUM('Investment Input'!X:X)} \\ & + \text{SUM('Investment Input'!I:I)} + \text{SUM('Investment Input'!V:V)} \\ & + \text{SUM('Investment Input'!J:J)} + \text{SUM('Investment Input'!W:W)}) \end{aligned}$$

Where:

AI3 = drop investment (pasted from loop module)

Inputs!\$K\$37 = Adjusted projection life (years) for Average Metallic Cable

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

'96 Actuals'!\$F\$52 = ARMIS Expense to Investment Factor: Cable & Wire Facilities

AH3 = terminal investment (pasted from loop module)

Inputs!\$K\$25 = Adjusted projection life (years) for NID & SAI

Inputs!\$K\$27 = Life for Aerial Cable – Metallic

Inputs!\$K\$29 = Life for Underground Cable - Metallic

Inputs!\$K\$31 = Life for Buried Cable - Metallic

'96 Actuals'!\$I\$44 = Alternative Cable Maintenance Factor for Copper Aerial Cable

'96 Actuals'!\$I\$46 = Alternative Cable Maintenance Factor for Copper Buried Cable

'Investment Input'!K = copper feeder cable aerial Investment

'Investment Input'!X = Distribution cable aerial Investment

'Investment Input'!J = copper feeder cable buried Investment

'Investment Input'!W = Distribution cable buried Investment

'Investment Input'!I = copper feeder cable underground Investment

'Investment Input'!V = Distribution cable underground Investment

ATTACHMENT N2

GTE
FCC Universal Service Cost Model Issues

Attachment N2.

To disable the formula used for calculating Total Operations General Support Allocator (cell H116 in the 96 Actuals tab in the Wire Center expense module) the entry in that cell should be replaced by 0. This is because the network support investments are multiplied by the factor (1- Total Operations General Support Allocator) and making the allocator 0 would nullify the lowering of the network support investments. Similarly for disabling the formula used for calculating "Office Worker" General Support Allocator (cell H117 in the 96 Actuals tab in the Wire Center expense module) the entry in the cell should be replaced by 1. This is because the general support investments are multiplied by the factor Office Worker" General Support Allocator and making the allocator 1 would nullify the lowering of the general support investments. The corresponding entries for calculating the two allocators in the Density Zone expense module are contained in cells H115 and H116 respectively in the 96 Actuals tab.

ATTACHMENT O

GTE
FCC Universal Service Cost Model Issues

Attachment O.

A difference in the methodology is found in the way the Density Zone module and Wire Center module assign the local portion of the signaling costs. In the Density Zone file, the UNE costs for signaling are first calculated on a cost per call basis. To arrive at the cost per line for USF calculations the UNE cost is multiplied by the factor:

*(Interoffice Local Actual/ Min * Interlata Calls Completed / IXC switched access MOU/switched lines).*

In the Wire Center module the USFcost is derived from the total signaling cost by multiplying it by the factor:

(Interoffice Local Actual/ Min/ Total Actual/ Min/ switched lines)

Since the two multiplying factors differ, the USF costs for signaling are also likely to be different in the two modules. Aside from the difference mentioned above, it is incorrect to use the ratio of InterLATA Calls Completed and IXC switched access MOU in the Density Zone module. The appropriate ratio should have been derived using Total Interoffice Calls Completed and Total interoffice switched access minutes. In the same way in the Wire Center module, the Total Actual Min used in the denominator ought to be replaced by Total Interoffice Actual Min since signaling costs are likely to arise only from interoffice calls.

ATTACHMENT P1

GTE
FCC Universal Service Cost Model Issues

Attachment P1.

A suggested formula change in cell DH3 of the Investment Input Tab in the Wire Center expense module for including structure sharing for underground placement is as follows (Please also see **Attachment M2.**)

Existing Formula = $(O3*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!K35))+(Inputs!K35-TRUNC(Inputs!K35))*INDEX(CCCFact,1,1+TRUNC(Inputs!K35))))+((O3+Q3+R3)*'96 Actuals'!F51)$

Proposed Formula= $(O3*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!K35))+(Inputs!K35-TRUNC(Inputs!K35))*INDEX(CCCFact,1,1+TRUNC(Inputs!K35))))+((O3*'96 Actuals'!F51)+((Q3*'96 Actuals'!I45)+(R3*'96 Actuals'!H45))*Inputs!G70)$

Where:

O3= feeder conduit (pasted from loop module)

Q3 = copper feeder underground placement (pasted from loop module)

R3 = fiber feeder underground placement (pasted from loop module)

Inputs!\$K\$35 = Adjusted projection life (years) for Conduit Systems

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

Inputs!\$G\$70 = structure fraction assign. to telephone for undgd. feeder: density zone 650-850

'96 Actuals'!\$F\$51 = ARMIS Expense to Investment Factor for Conduit Systems

'96 Actuals'!\$I\$45 = Alternative Cable Maintenance Factor for Copper Underground Cable

'96 Actuals'!\$H\$45 = Alternative Cable Maintenance Factor for Fiber Underground Cable

ATTACHMENT P2

Attachment P2.

A suggested formula change in cell CN3 of the Investment Input Tab in the Wire Center expense module for including structure sharing for underground placement is as follows

Existing Formula =(Z3*Inputs!\$E\$70)*((1-(Inputs!\$K\$35-
TRUNC(Inputs!\$K\$35)))*INDEX(CCCFact,1,TRUNC(Inputs!\$K\$35))+
(Inputs!\$K\$35-
TRUNC(Inputs!\$K\$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!\$K\$35)))+(Z3*'96
Actuals'!\$F\$51)

Proposed Formula =(Z3*Inputs!\$E\$70)*((1-(Inputs!\$K\$35-
TRUNC(Inputs!\$K\$35)))*INDEX(CCCFact,1,TRUNC(Inputs!\$K\$35))+
(Inputs!\$K\$35-
TRUNC(Inputs!\$K\$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!\$K\$35)))+(Z3*'96
Actuals'!\$F\$51*Inputs!\$E\$70)

Where:

Z3 = distribution conduit placement (pasted from loop module)

Inputs!\$E\$70 = structure fraction assign. to telephone for undergr.distrib.: density zone
650-850

Inputs!\$K\$35 = Adjusted projection life (years) for Conduit Systems

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

'96 Actuals'!\$F\$51 = ARMIS Expense to Investment Factor for Conduit Systems

ATTACHMENT Q

GTE
FCC Universal Service Cost Model Issues

Attachment Q.

A suggested formula change in cell L28 of the Inputs Tab in the Density Zone expense module for including the correct investment for all density zones is as follows

Existing Formula = 'Investment Input'!O21+'Investment Input'!BA21+'Investment Input'!BH17+'Investment Input'!BO17

Proposed Formula = 'Investment Input'!O21+'Investment Input'!BA21+'Investment Input'!BH21+'Investment Input'!BO21

Where:

'Investment Input'!O21 = fiber feeder cable aerial total investment

'Investment Input'!BA21 = common transport, aerial total investment

'Investment Input'!BH17 = direct transport, aerial for density zone 650-850

'Investment Input'!BO17 = dedicated transport, aerial for density zone 650-850

'Investment Input'!BH21 = direct transport, aerial total investment

'Investment Input'!BO21 = dedicated transport, aerial total investment

ATTACHMENT R

GTE
FCC Universal Service Cost Model Issues

Attachment R.

A suggested formula change in cell DK3 of the Investment Input Tab in the Wire Center expense module for including the correct equity fraction is as follows

Existing Formula = $(AP3*((1-(Inputs!$K$16-TRUNC(Inputs!$K$16)))*INDEX(CCCFact,1,TRUNC(Inputs!K16))+Inputs!K16-TRUNC(Inputs!K16))*INDEX(CCCFact,1,1+TRUNC(Inputs!K16)))+(AP3*96*Actuals!F11)+((AQ3*Inputs!D14)+((EquityP*(AQ3*Inputs!C11)*Inputs!C46)/(1-Inputs!C46)))$

Proposed Formula = $(AP3*((1-(Inputs!$K$16-TRUNC(Inputs!$K$16)))*INDEX(CCCFact,1,TRUNC(Inputs!K16))+Inputs!K16-TRUNC(Inputs!K16))*INDEX(CCCFact,1,1+TRUNC(Inputs!K16)))+(AP3*96*Actuals!F11)+((AQ3*Inputs!D14)+((EquityF*(AQ3*Inputs!C11)*Inputs!C46)/(1-Inputs!C46)))$

Where:

AP3 = end office wire center investment (pasted from loop module)

AQ3 = land investment (pasted from loop module)

Inputs!\$K\$16 = Adjusted projection life (years) for Buildings

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

'96 Actuals!\$F\$11 = ARMIS Expense to Investment Factor for Buildings

Inputs!\$D\$14 = Overall Average Cost of Capital (i.e., WACC)

Inputs!\$C\$11 = Cost of Equity

EquityP = Weighted Equity Fraction (i.e., of the overall WACC, what proportion is attributable to the return on equity;

Inputs!\$C\$46 = Composite State & Federal Tax Rate

EquityF = Equity Fraction

ATTACHMENT S

GTE
FCC Universal Service Cost Model Issues

Attachment S.

A suggested formula change in cell HR3 of the Investment Input Tab in the Wire Center expense module for including the local portion of tandem switch costs is as follows

Existing Formula

```
=IF(B3="","",0,((((HG3+HH3)*Inputs!$F$102)+((HI3+HJ3)*Inputs!$C$85)))/GD3/(Summary!$C$3+Summary!$D$3+Summary!$F$3)/12)*((1-'96 Actuals'!$F$142)/(1-'96 Actuals'!$F$141))))
```

Proposed Formula =

```
IF(B3="","",0,((((HG3+HH3)*Inputs!$F$102)+((HI3+HJ3)*Inputs!$C$85)+(HK3*Inputs!$C$108)))/GD3/(Summary!$C$3+Summary!$D$3+Summary!$F$3)/12)*((1-'96 Actuals'!$F$142)/(1-'96 Actuals'!$F$141))))
```

Where:

B3 = Total lines

HG3 = Direct Transport Unit Cost per minute

HH3 = Direct Transmission Unit Cost

HI3 = Common Transport Unit Cost per minute per leg

HJ3 = Common Transmission Unit Cost per minute

HK3 = Tandem Switching Unit Cost

Inputs!\$F\$102 = Local Direct Transport MOU

Inputs!\$C\$85 = Local Common Transport MOU

Inputs!\$C\$108 = Local Tandem Switch MOU

Summary!\$C\$3 = business lines

Summary!\$D\$3 = residential lines

Summary!\$F\$3 = public lines

'96 Actuals'!\$F\$142 = Wholesale factor

'96 Actuals'!\$F\$141 = Uncollectible factor

ATTACHMENT T

GTE
FCC Universal Service Cost Model Issues

Attachment T.

Change history since 5.0a in Wire Center expense module

- 1 28-Aug-98 Added "PerLine" worksheet, permitting entry of per-line expenses for each expense category.
- 2 09-Sep-98 Added input cells in "Inputs" worksheet for residential and business DEMs per line.
- 3 ***09-Sep-98 Added columns to "Investment Input" worksheet to receive average density for each wire center and number of signaling links for each wire center.***
- 4 ***10-Sep-98 Added calculation of total annual business and residential DEMs in columns CG, CH of "Investment Input" worksheet.***
- 5 10-Sep-98 Corrected relative reference (should be absolute) to Inputs!\$H\$70 in column DD of "Investment Input" worksheet. (This is in column DB of this version, it will be in DD in the final version).
- 6 10-Sep-98 Corrected error in calculation of feeder manhole sharing, column DK of "Investment Input" worksheet.
- 7 ***10-Sep-98 Modified all formulae in "Investment Input" worksheet that use structure sharing percentages to use new calculated average wire center density in column CE. Formulae that were changed are marked in red with a yellow background. Note that this overwrites the change in number 5 above.***
- 8 10-Sep-98 Applied structure sharing percent to placement components of feeder conduit (Column DJ).
- 9 ***11-Sep-98 Changed signaling links unit cost calculation (Investment Input!HD) to use new signaling links input value from SIO module.***
- 10 25-Sep-98 Reversed changes 3, 4, 7, and 9 above (shown in bold italics) to accommodate change 11 without requiring changes to interface. Changed formulae left in red type to facilitate restoring these changes when interface changes are made.
- 11 25-Sep-98 Added alternative cable maintenance factors to "96 Actuals" worksheet, separately for fiber and copper, and re-oriented all calculations using cable maintenance factors to the appropriate alternative factor. Note that, by default, both copper and fiber factors are equated to the calculated ARMIS value. User can manually enter an alternative value in any of the six cells in columns H and I to override.

It is not clear as to why the structure sharing percentage calculated for average wire center density was reversed on 25-Sep-98 since for accommodating changes in 11 that does not seem necessary.

ATTACHMENT U

GTE
FCC Universal Service Cost Model Issues

	A	B	C	D	E	F	G	H	I
1	unit terminal;								
2	{\$X+}								
3	{\$N+}								
4	interface								
5									
6	uses Globals, Cable, WinDOS, WinCrt;								
7									
8	function fibèr_terminal_cost_fn(
9	lines : double;								
10	distance : double;								
11	density : double;								
12	var								
13	n2016 : integer;								
14	var								
15	n1344 : integer;								
16	var								
17	n672 : integer;								
18	var								
19	n96 : integer;								
20	var								
21	n24 : integer;								
22	pct_ugd : double;								
23	pct_bur : double;								
24	pct_aer : double								
25) : double;								
26									
27	function t1_terminal_cost_fn(
28	lines : double;								
29	var								
30	nc96 : integer;								
31	var								
32	nc24 : integer								
33) : double;								
34									
35	function drop_terminal_cost_fn(
36	lines : double;								
37	density : double;								
38	pct_ugd : double;								
39	pct_bur : double;								
40	pct_aer : double								
41) : double;								
42									
43	implementation								
44	(*-----*								
45	(*-----*								
46	function fiber_terminal_cost_fn(
47	lines : double;								
48	distance : double;								
49	density : double;								
50	var								
51	n2016 : integer;								

Terminal.pas

	A	B	C	D	E	F	G	H	I
52			var						
53			n1344	: integer;					
54			var						
55			n672	: integer;					
56			var						
57			n96	: integer;					
58			var						
59			n24	: integer;					
60			pct_ugd	: double;					
61			pct_bur	: double;					
62			pct_aer	: double					
63)	: double;					
64	{								
65			Calculates cost of fiber terminals for a given number of DS0 lines served, including						
66			number of terminals of each size, using integer search.						
67	}								
68	var								
69	cost	:	double;						
70	mincost	:	double;						
71	min2016	:	integer;						
72	min1344	:	integer;						
73	min672	:	integer;						
74	min96	:	integer;						
75	min24	:	integer;						
76	l2016	:	double;						
77	l1344	:	double;						
78	l672	:	double;						
79	l96	:	double;						
80	l24	:	double;						
81	cabcost	:	double;						
82	uc	:	double;						
83	bc	:	double;						
84	ac	:	double;						
85	uf	:	double;						
86	bf	:	double;						
87	af	:	double;						
88									
89									
90	begin								
91	IF lines > half then								
92	BEGIN								
93	mincost := 1.0e+16;								
94	n2016 := 0;								
95	repeat								
96	n1344 := 0;								
97	repeat								
98	n672 := 0;								
99	repeat								
100	n96 := 0;								
101	repeat								
102									

Terminal.pas

```

A   B   C   D   E   F   G   H   I
103  n24 := round( (lines - 2016.0*n2016 - 1344.0*n1344 - 672.0*n672 - 96.0*n96)/24.0 + half
104
105      if n24<0 then n24 := 0;
106
107      l2016 := min( 2016.0*n2016, lines );
108      l1344 := min( 1344.0*n1344, lines - l2016 );
109      l672 := min( 672.0*n672, lines - l2016 - l1344 );
110      l96 := min( 96.0*n96, lines - l2016 - l1344 - l672 );
111      l24 := lines - l2016 - l1344 - l672 - l96;
112
113
114      cost := a2016*n2016 + b2016*l2016 +
115          a1344*n1344 + b1344*l1344 +
116          a672*n672 + b672*l672 +
117          a96*n96 + b96*l96 +
118          a24*n24 + b24*l24;
119
120
121      if ( n2016+n1344+n672 > 0 ) or ( n96 + n24 > 2 ) then cost := cost + site_prep_cost;
122
123      cabcost :=
124          feed_cable_cost( (n2016+n1344+n672+n96+n24)*4.0/FiberFillFactor, density, fiber,
125              uc, bc, ac, uf, bf, af,
126              pct_ugd, pct_bur, pct_aer );
127
128      cost := cost + cabcost*distance;
129      if cost < mincost then
130          begin
131              mincost := cost;
132              min2016 := n2016;
133              min1344 := n1344;
134              min672 := n672;
135              min96 := n96;
136              min24 := n24;
137          end;
138
139          n96 := n96 + 1;
140          until n96 = max(round( (lines - 2016.0*n2016 - 1344.0*n1344 - 672.0*n672)/96.0 + half ),0) +
141
142          n672 := n672 + 1;
143          until n672 = max(round( (lines - 2016.0*n2016 - 1344.0*n1344)/672.0 + half ),0) + 1;
144
145          n1344 := n1344 + 1;
146          until n1344 = max(round( (lines - 2016.0*n2016)/1344.0 + half ),0) + 1;
147
148          n2016 := n2016 + 1;
149          until n2016 = max(round( lines/2016.0 + half ),0) + 1;
150
151          n2016 := min2016;
152          n1344 := min1344;
153          n672 := min672;

```

Terminal.pas

	A	B	C	D	E	F	G	H	I
154	n96 := min96;								
155	n24 := min24;								
156									
157	cabcost := feed_cable_cost((n2016+n1344+n672+n96+n24)*4.0/FiberFillFactor, density, fiber, uc, b								
158	pct_udg, pct_bur, pct_aer);								
159	fiber_terminal_cost_fn := mincost - cabcost*distance;								
160	END { if lines > half }								
161	ELSE								
162	BEGIN								
163	n2016 := 0;								
164	n1344 := 0;								
165	n672 := 0;								
166	n96 := 0;								
167	n24 := 0;								
168									
169	fiber_terminal_cost_fn := zero;								
170	END;								
171	end;								
172									
173									
174	(*-----								
175	(*-----								
176	function t1_terminal_cost_fn(
177	lines : double;								
178	var								
179	nc96 : integer;								
180	var								
181	nc24 : integer								
182) : double;								
183	{								
184	Calculates cost of t-1 terminals for a given number of DS0 lines served, including								
185	number of terminals of each size, using integer search.								
186	}								
187	var								
188	cost : double;								
189	mincost : double;								
190	min96 : integer;								
191	min24 : integer;								
192	i : integer;								
193	l96 : double;								
194	l24 : double;								
195									
196									
197	begin								
198	if lines > half then								
199	BEGIN								
200	mincost := 1.0e+16;								
201	for i := 0 to round(max(round(lines/96.0 + half),0)) do								
202	begin								
203	nc96 := i;								
204	nc24 := round((lines - 96.0*nc96)/24.0 + half);								

	A	B	C	D	E	F	G	H	I
103									
104	tmp1 :=								
105	fiber_terminal_cost_fn(SA_array^[i]^lines/FillFactor,feeder_distance,SA_array^[i]^density,								
106	n2016,n1344,n672,n96,n24,								
107	pct_ugd,pct_bur,pct_aer);								
108	tmp1 := tmp1*ac_fib_term;								
109									
110	If := (n2016+n1344+n672+n96+n24)*4.0/FiberFillFactor;								
111									
112	{ Calculate provisional terminal costs. Note that the terminal cost fns use DS0 equivalent lines, s								
113	{ need the fill factor, but not DS1 calculations.								}
114									
115									
116	tmp2 :=								
117	t1_terminal_cost_fn(SA_array^[i]^lines/FillFactor,n96,n24);								
118	tmp2 := tmp2*ac_t1_term;								
119									
120	tmp3 := zero;								
121	for n := 1 to NumXCBBoxSizes do								
122	if l26 >= IntfcCost[n]^NumLines								
123	then tmp3 := IntfcCost[n]^cost;								
124	tmp3 := tmp3*ac_fdi;								
125									
126									
127									
128	{ We will choose feeder technology by least-cost under the assumption that each SA sends feed								
129	{ to the switch without sharing cable. For digital terminals, the cost of an FDI is added.								}
130									
131									
132	cost[copper26] := feed_cable_cost(l26,density,copper26,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_ae								
133	cost[copper26] := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib + bf*ac_b								
134	feeder_distance + tmp3;								
135									
136	cost[copper24] := feed_cable_cost(l24,density,copper24,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_ae								
137	cost[copper24] := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib + bf*ac_b								
138	feeder_distance + tmp3;								
139									
140	cost[t_1] := feed_cable_cost(lt1,density,t_1,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_aer);								
141	cost[t_1] := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib + bf*ac_bur_fib								
142	feeder_distance + tmp2 + tmp3;								
143									
144	cost[fiber] := feed_cable_cost(lf,density,fiber,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_aer);								
145	cost[fiber] := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib + bf*ac_bur_fi								
146	feeder_distance + tmp1 + tmp3;								
147									
148									
149	if (feeder_distance + SA_array^[i]^MaxDistance > copper_gauge_xover)								
150	or (feeder_distance + SA_array^[i]^MaxDistance > max_copper_distance)								
151	or (feeder_distance > copper_t1_xover)								
152	then cost[copper26] := big;								
153									

Globals.pas

	A	B	C	D	E	F	G	H	I
105	t8 = record								
106	density : double;								
107	FeedUgd : double;								
108	DistUgd : double;								
109	FeedBur : double;								
110	DistBur : double;								
111	FeedAer : double;								
112	DistAer : double;								
113	end;								
114	t8_ptr = ^t8;								
115									
116	t9=t8;								
117	t9_ptr = ^t9;								
118									
119	t10 = t8;								
120	t10_ptr = ^t10;								
121									
122	t11 = record								
123	DuctCap : integer;								
124	NormalCost : double;								
125	SoftCost : double;								
126	HardCost : double;								
127	end;								
128	t11_ptr = ^t11;								
129									
130	t12 = record								
131	density : double;								
132	ManholeSpacing : double;								
133	end;								
134	t12_ptr = ^t12;								
135									
136	t13 = record								
137	density : double;								
138	UgdPct : double;								
139	BurPct : double;								
140	AerPct : double;								
141	end;								
142	t13_ptr = ^t13;								
143									
144	t14=t13;								
145	t14_ptr = ^t14;								
146									
147	t15=t13;								
148	t15_ptr = ^t15;								
149									
150	t16 = record								
151	density : double;								
152	FeedFillFactor : double;								
153	DistFillFactor : double;								
154	end;								
155	t16_ptr=^t16;								
156									

Globals.pas

	A	B	C	D	E	F	G	H	I
261	lines_per_bus		: double;						
262	max_copper_distance		: double;						
263	MaxCopperPenalty		: double;						
264	copper_gauge_xover		: double;						
265	copper_t1_xover		: double;						
266	t1_fiber_xover		: double;						
267	a2016		: double;						
268	b2016		: double;						
269	a1344		: double;						
270	b1344		: double;						
271	a672		: double;						
272	b672		: double;						
273	a96		: double;						
274	b96		: double;						
275	a24		: double;						
276	b24		: double;						
277	site_prep_cost		: double;						
278	ac96		: double;						
279	bc96		: double;						
280	ac24		: double;						
281	bc24		: double;						
282	SA_array		: glrarray_ptr;						
283	NumDensZones		: integer;						
284	Num26CableSizes		: integer;						
285	Num24CableSizes		: integer;						
286	NumFeed26CableSizes		: integer;						
287	NumFeed24CableSizes		: integer;						
288	NumT1CableSizes		: integer;						
289	NumFiberCableSizes		: integer;						
290	NumDropTerminalSizes		: integer;						
291	NumManholeSizes		: integer;						
292	NumXCBBoxSizes		: integer;						
293	NumTexTypes		: integer;						
294	Cop26DistCost		: array [1..30] of t1_ptr;						
295	Cop24DistCost		: array [1..30] of t1_ptr;						
296	DropTermCost		: array[1..30] of t2_ptr;						
297	Cop26FeedCost		: array[1..30] of t3_ptr;						
298	Cop24FeedCost		: array[1..30] of t3_ptr;						
299	T1FeedCost		: array[1..30] of t3_ptr;						
300	FiberFeedCost		: array[1..30] of t4_ptr;						
301	IntfcCost		: array[1..30] of t7_ptr;						
302	NormalStruc		: array[1..30] of t8_ptr;						
303	SoftRockStruc		: array[1..30] of t9_ptr;						
304	HardRockStruc		: array[1..30] of t10_ptr;						
305	ManholeCost		: array[1..30] of t11_ptr;						
306	ManholeSpac		: array[1..30] of t12_ptr;						
307	DistPlantMix		: array[1..30] of t13_ptr;						
308	CopFeedPlantMix		: array[1..30] of t14_ptr;						
309	FibFeedPlantMix		: array[1..30] of t15_ptr;						
310	FillFact		: array[1..30] of t16_ptr;						
311	SurfText		: t22_ptr_array;						
312	Sharing		: array[1..30] of t23_ptr;						

ATTACHMENT V

GTE
FCC Universal Service Cost Model Issues

- Within a grid, if the length of copper from the DLC to the last lot in a quadrant is less than 11,100 feet, 26 gauge cable is used to serve all customers. In those circumstances where the distance from the DLC to the last lot is greater than 11,100 feet, 24 gauge wire is used in all cables to and within the distribution quadrant. Where distances exceed 13,600 feet, extended range plug-ins are installed on lines that exceed 13,600 feet.
- The mix of aerial, buried and underground facilities is determined by terrain³⁹ and density⁴⁰ specific to that grid.⁴¹
- Terminals
 - Exterior Drop terminals are provided at each point where drops connect to branch cables and are sized for the number of connecting drops.
 - Indoor building terminals are placed on each multi-tenant builaing and are sized for the number of lines terminated at that location.
 - Different NIDs are used for business and residence locations. One housing is included for each living unit or business location, in addition to one protector and one interface per drop pair terminated.
 - Terminal cost input tables include entries for separate components of the installation process.
- Cables are sized using the following basic rules:
 - Branch cables are sized to the number of pairs for housing units and business locations. (This calculation takes the number of housing units times pairs per housing unit and the greater of actual business pairs per location or business locations times pairs per location.)
 - Each backbone cable is sized to carry 1/2 of the branch cable pairs to the FDI.
 - Cables throughout the feeder system are sized based on the actual number of pairs used from the FDI back to the switch.⁴²

³⁹ The nature of the terrain, i.e. rocky, sandy, hilly etc. is taken from the State Soil Geography (STATSGO) data based produced by the United States Department of Agriculture, and is defined for each microgrid. In most cases, a single microgrid covers a single terrain type. In the case that more than one type of terrain is covered by a single microgrid, a weighted average of terrain types is captured for the microgrid. Since the slope is one aspect of terrain, changes in slope affect cable length and cost.

⁴⁰ The model defines nine density zones based on lines per square mile. In addition to plant mix, density also influences cable fills and placement costs.

⁴¹ More precisely, look up tables are utilized that specify cable mix based on terrain and density.

```

1 unit tech;
2 {SK+}
3 {SN+}
4 interface
5 uses Globals, Terminal, Cable, WinDOS, WinCrt;
6 procedure calculate_feeder_technology(
7           feeder_distance : double;
8           i               : integer;
9           density        : double;
10          FillFactor     : double;
11          var
12          technology     : techtype;
13          var
14          n2016          : integer;
15          var
16          n672           : integer;
17          var
18          n96            : integer;
19          var
20          n24            : integer;
21          pct_ugd        : double;
22          pct_bur        : double;
23          pct_aer        : double
24      );
25
26
27 implementation
28 procedure calculate_feeder_technology(
29           feeder_distance : double;
30           i               : integer;
31           density        : double;
32           FillFactor     : double;
33           var
34           technology     : techtype;
35           var
36           n2016          : integer;
37           var
38           n672           : integer;
39           var
40           n96            : integer;
41           var
42           n24            : integer;
43           pct_ugd        : double;
44           pct_bur        : double;
45           pct_aer        : double
46       );
47
48 var
49   n           : integer;
50   tmp1        : double;
51   tmp2        : double;
52   tmp3        : double;
53   c26         : double;
54   c24         : double;
55   ct1         : double;
56   cf          : double;
57   l26         : double;

```

```

58     l24      : double;
59     lt1      : double;
60     lf       : double;
61     uc       : double;
62     bc       : double;
63     ac       : double;
64     uf       : double;
65     bf       : double;
66     af       : double;
67 begin
68
69     n2016 := 0;
70     n672  := 0;
71     n96   := 0;
72     n24   := 0;
73     technology := copper26;
74
75     SA_array^[i]^fiber_terminal_cost := zero;
76     SA_array^[i]^tl_terminal_cost := zero;
77     SA_array^[i]^interface_cost := zero;
78
79     SA_array^[i]^n2016 := 0;
80     SA_array^[i]^n672  := 0;
81     SA_array^[i]^n96   := 0;
82     SA_array^[i]^n24   := 0;
83     SA_array^[i]^nc96  := 0;
84     SA_array^[i]^nc24  := 0;
85
86     126 := SA_array^[i]^ResLines/FillFactor +
87           (SA_array^[i]^BusLines - 11.0/12.0*SA_array^[i]^SwitchedDS1 -
88            SA_array^[i]^SpclAccessLines -
89            11.0/12.0*SA_array^[i]^SpclAccessDS1)/FillFactor;
90
91 (*!!!!!!!!!!!!!!!!!!!!!!NOTE!!!!!!!!!!!!!!!!!!!!!!*)
92 (!!!!!!!*)
93 { The special access term above has been added to SA.BusLines to
94 comport with HAI. Originally, it }
95 { was subtracted.
96 }
97
98 (*!!!!!!!!!!!!!!!!!!!!!!NOTE!!!!!!!!!!!!!!!!!!!!!!*)
99 (!!!!!!!*)
100 124 := 126;
101
102 lt1 := SA_array^[i]^lines/FillFactor*t1_redundancy_factor/12.0;
103
104 tmp1 :=
105
106 fiber_terminal_cost_fn(SA_array^[i]^lines/FillFactor,feeder_distance,SA_array^
107 [i]^density,n2016,n672,n96,n24,
108          pct_ugd,pct_bur,pct_aer);
109 tmp1 := tmp1*ac_fib_term;
110
111 lf := (n2016+n672+n96+n24)*4.0/FiberFillFactor;
112
113 { Calculate provisional terminal costs. Note that the terminal cost
114 fns use DSO equivalent lines, so we }

```

```

115     { need the fill factor, but not DSI calculations.
116   ;
117
118
119     tmp2 :=
120       t1_terminal_cost_fn(SA_array^[i]^lines/FillFactor,n96,n24);
121     tmp2 := tmp2*ac_t1_term;
122
123     tmp3 := zero;
124     for n := 1 to NumXCBoxSizes do
125       if l26 >= IntfcCost[n]^NumLines
126         then tmp3 := IntfcCost[n]^cost;
127         tmp3 := tmp3*ac_fdi;
128
129
130
131     { We will choose feeder technology by least-cost under the assumption
132 that each SA sends feeder directly }
133     { to the switch without sharing cable. For digital terminals, the
134 cost of an FDI is added. }
135
136
137     c26 :=
138     feed_cable_cost(l26,density,copper26,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_aer);
139   ;
140     c26 := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib
141 + bf*ac_bur_fib + af*ac_aer_fib)*
142       feeder_distance + tmp3;
143
144     c24 :=
145     feed_cable_cost(l24,density,copper24,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_aer);
146   ;
147     c24 := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib
148 + bf*ac_bur_fib + af*ac_aer_fib)*
149       feeder_distance + tmp3;
150
151     ct1 :=
152     feed_cable_cost(lt1,density,t_1,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_aer);
153       ct1 := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib
154 + bf*ac_bur_fib + af*ac_aer_fib)*
155       feeder_distance + tmp2 + tmp3;
156
157     cf := feed_cable_cost(
158 lf,density,fiber,uc,bc,ac,uf,bf,af,pct_ugd,pct_bur,pct_aer);
159       cf := (uc*ac_ugd_cop + bc*ac_bur_cop + ac*ac_aer_cop + uf*ac_ugd_fib
160 + bf*ac_bur_fib + af*ac_aer_fib)*
161       feeder_distance + tmp1 + tmp3;
162
163     technology := copper26;
164
165     if ( c24 < c26 )
166     or (feeder_distance + SA_array^[i]^MaxDistance > copper_gauge_xover)
167     then technology := copper24;
168
169     if ( ( ct1 < min( c24,c26 ) ) )
170     or (feeder_distance + SA_array^[i]^MaxDistance >
171 max_copper_distance)

```

```

172     or (feeder_distance > copper_t1_xover)
173 then technology := t_1;
174
175     if ( cf < min( min(c24,c26), ct1 ) )
176     or (feeder_distance > t1_fiber_xover)
177 then technology := fiber;
178
179     SA_array^ [i]^ .feeder_technology := technology;
180
181     if technology = fiber then
182 begin
183         SA_array^ [i]^ .fiber_terminal_cost := 
184
185     fiber_terminal_cost_fn(SA_array^ [i]^ .lines/FillFactor,feeder_distance,SA_array^
186 [i]^ .density,
187
188     n2016,n672,n96,n24,pct_ugd,pct_bur,pct_aer);
189         SA_array^ [i]^ .interface_cost := tmp3;
190         SA_array^ [i]^ .n2016 := n2016;
191         SA_array^ [i]^ .n672 := n672;
192         SA_array^ [i]^ .n96 := n96;
193         SA_array^ [i]^ .n24 := n24;
194     end
195     else if technology = t_1 then
196 begin
197         SA_array^ [i]^ .t1_terminal_cost :=
198     t1_terminal_cost_fn(SA_array^ [i]^ .lines/FillFactor,n96,n24);
199         SA_array^ [i]^ .interface_cost := tmp3;
200         SA_array^ [i]^ .nc96 := n96;
201         SA_array^ [i]^ .nc24 := n24;
202         n2016 := 0;
203         n672 := 0;
204     end
205     else
206 is analog }                                     { technology
207         SA_array^ [i]^ .interface_cost := tmp3;
208
209     { Add in switched DS1 line terminals }
210
211     if (technology=copper26) or (technology=copper24) then
212 begin
213         SA_array^ [i]^ .t1_terminal_cost := SA_array^ [i]^ .t1_terminal_cost
214 +
215
216     t1_terminal_cost_fn((SA_array^ [i]^ .SwitchedDS1+SA_array^ [i]^ .SpclAccessDS1)(*12
217 .0},
218
219
220
221
222
223
224
225
226
227
228

```

```
229     SA_array^[i]^ .nc96 := SA_array^[i]^ .nc96 + n96;
230     SA_array^[i]^ .nc24 := SA_array^[i]^ .nc24 + n24;
231     n2016 := 0;
232     n672 := 0;
233     n96 := SA_array^[i]^ .nc96;
234     n24 := SA_array^[i]^ .nc24;
235   end;
236
237
238
239 end; { procedure }
240
241 end.
```

ATTACHMENT W

GTE
FCC Universal Service Cost Model Issues

C&P Maryland.xls
distribution output by cluster

	C	D	E	AC	AD	AE	AF	AG	AL
1	wire center	CBG number	quadrant	number of high-density RTs	high-density RT investment	number of low-density DLC RTs	and T1 road terminal and repeater investment	fiber strands required	number of DLC lines
2	ABRDMDAB	240253029021	4	4	293917.78	0	0	8	1816
3	ABRDMDAB	240253025009	4	2	184136.11	0	0	4	919
4	ABRDMDAB	240253017001	3	3	239977.78	0	0	4	1312
5	ABRDMDAB	240253011022	3	1	127544.44	0	0	4	436
6	ABRDMDAB	240253063001	1	2	172597.22	0	0	4	785
7	ABRDMDAB	240253022001	2	0	0	8	138723	0	0
8	ABRDMDAB	240253024002	4	3	280191.67	0	0	4	1779
9	ABRDMDAB	240253063001	1	3	245919.44	0	0	4	1381
10	ABRDMDAB	240253029023	4	2	190250	0	0	4	990
11	ABRDMDAB	240253028023	3	3	275197.22	0	0	4	1721
12	ABRDMDAB	240253028013	2	3	250655.56	0	0	4	1436
13	ABRDMDAB	240253029022	4	4	382113.89	0	0	8	2231
14	ABRDMDAB	240253028023	3	3	280450	0	0	4	1782
15	ALTWMDAT	240338012041	1	3	251000	0	0	4	1440
16	ALTWMDAT	240338013041	3	3	271666.67	0	0	4	1680
17	ALTWMDAT	240338013041	4	3	245230.56	0	0	4	1373
18	ALTWMDAT	240338014012	3	2	190594.44	0	0	4	994
19	ALTWMDAT	240338012043	4	3	239288.89	0	0	4	1304
20	ALTWMDAT	240338012033	1	2	172855.56	0	0	4	788
21	ALTWMDAT	240338012041	1	3	272097.22	0	0	4	1685
22	ALTWMDAT	240338012032	1	2	208333.33	0	0	4	1200
23	ALTWMDAT	240338014011	3	3	263400	0	0	4	1584
24	ALTWMDAT	240338014011	2	3	245058.33	0	0	4	1371
25	ALTWMDAT	240338019014	1	2	201186.11	0	0	4	1117
26	ARBTMDAR	245102501032	1	3	261161.11	0	0	4	1558
27	ARBTMDAR	240054306002	4	2	189216.67	0	0	4	978
28	ARBTMDAR	245102804032	2	3	278125	0	0	4	1755
29	ARBTMDAR	240054307003	4	2	207127.78	0	0	4	1186
30	ARBTMDAR	245102804031	2	3	254013.89	0	0	4	1475
31	ARBTMDAR	245102501012	2	0	0	0	0	0	0
32	ARBTMDAR	240054306001	4	2	197827.78	0	0	4	1078
33	ARBTMDAR	240054001001	3	0	0	0	0	0	0
34	ARBTMDAR	240054304003	4	3	241183.33	0	0	4	1326
35	ARBTMDAR	240054302001	1	3	278727.78	0	0	4	1762
36	ARBTMDAR	245102502053	1	3	258750	0	0	4	1530

fcc model 2-2-99 less two wirecenters

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C&P Maryland.xls
distribution output by cluster

	C	D	E	AC	AD	AE	AF	AG	AL
1	wire center	CBG number	quadrant	number of high-density RTs	high-density RT investment	number of low-density DLC RTs	and T1 road terminal and repeater investment	fiber strands required	number of DLC lines
37	ARBTMDAR	240054016029	4	3	221815.56	0	0	8	1229
38	ARBTMDAR	240054307005	4	3	261763.89	0	0	4	1565
39	ARBTMDAR	245102008002	2	3	246952.78	0	0	4	1393
40	ARBTMDAR	240054304003	4	3	278297.22	0	0	4	1757
41	ARBTMDAR	240054307001	4	3	249277.78	0	0	4	1420
42	ARBTMDAR	240054302002	4	2	198000	0	0	4	1080
43	ARBTMDAR	240054304003	4	3	231871.11	0	0	8	1270
44	ARBTMDAR	245102502054	1	3	278555.56	0	0	4	1760
45	ARBTMDAR	240054302001	1	2	199722.22	0	0	4	1100
46	ARBTMDAR	240054308001	4	3	264002.78	0	0	4	1591
47	ARBTMDAR	240054309004	4	3	279330.56	0	0	4	1769
48	ARBTMDAR	245102503032	1	3	252636.11	0	0	4	1459
49	ARBTMDAR	245102502063	1	3	272355.56	0	0	4	1688
50	ARBTMDAR	245102502063	1	2	191972.22	0	0	4	1010
51	ARBTMDAR	240054309001	4	0	0	0	0	0	0
52	ARBTMDAR	245102502061	1	3	264519.44	0	0	4	1597
53	ARBTMDAR	245102008001	2	3	231871.11	0	0	8	1270
54	ARBTMDAR	245102502064	1	3	221148.89	0	0	8	1223
55	ARBTMDAR	245102501022	2	0	0	0	0	0	0
56	ARBTMDAR	240054309003	4	0	0	0	0	0	0
57	ARBTMDAR	245102501031	1	0	0	0	0	0	0
58	ARBTMDAR	245102501034	1	0	0	0	0	0	0
59	ARBTMDAR	240054304002	4	0	0	6	122179	0	0
60	ARBTMDAR	240054305002	1	2	207730.56	0	0	4	1193
61	ARBTMDAR	240054305002	1	3	240666.67	0	0	4	1320
62	ARMGMDAR	240037313053	3	0	0	0	0	0	0
63	ARMGMDAR	240037313036	1	2	207041.67	0	0	4	1185
64	ARMGMDAR	240037312025	1	3	273216.67	0	0	4	1698
65	ARMGMDAR	240037313065	1	3	260558.33	0	0	4	1551
66	ARMGMDAR	240037312028	1	2	196277.78	0	0	4	1060
67	ARMGMDAR	240037312041	3	2	173716.67	0	0	4	798
68	ARMGMDAR	240037301013	2	3	244713.89	0	0	4	1367
69	ARMGMDAR	240037313063	1	2	201013.89	0	0	4	1115
70	ARMGMDAR	240037312027	4	3	240838.89	0	0	4	1322

C&P Maryland.xls
distribution output by cluster

	C	D	E	AC	AD	AE	AF	AG	AL
1	wire center	CBG number	quadrant	number of high-density RTs	high-density RT investment	number of low-density DLC RTs	and T1 road terminal and repeater investment	fiber strands required	number of DLC lines
71	ARMGMDAR	240037313072	1	3	276747.22	0	0	4	1739
72	ARMGMDAR	240037312023	4	3	221482.22	0	0	8	1226
73	ARMGMDAR	240037313044	2	3	231537.78	0	0	8	1267
74	ARMGMDAR	240037313042	2	3	253325	0	0	4	1467
75	ARMGMDAR	240037302029	3	3	259094.44	0	0	4	1534
76	ARMGMDAR	240037313072	1	3	248761.11	0	0	4	1414
77	ARMGMDAR	240037312049	4	2	201530.56	0	0	4	1121
78	ARMGMDAR	240037301015	2	2	205491.67	0	0	4	1167
79	ARMGMDAR	240037313062	1	2	192919.44	0	0	4	1021
80	ARMGMDAR	240037313043	2	3	281655.56	0	0	4	1796
81	ARMGMDAR	240037313053	3	3	278383.33	0	0	4	1758
82	ARMGMDAR	240037313052	2	3	276661.11	0	0	4	1738
83	ARMGMDAR	240037313071	1	3	248072.22	0	0	4	1406
84	ARMGMDAR	240037313071	4	3	272097.22	0	0	4	1685
85	BADNMDBN	240178508013	3	4	372221.88	0	0	8	1881
86	BADNMDBN	240338010012	3	1	22375	0	0	4	51
87	BADNMDBN	240098601004	1	1	133400	0	0	4	448
88	BADNMDBN	240098602981	1	1	136209.38	0	0	4	477
89	BADNMDBN	240098606002	1	2	169421.88	0	0	4	665
90	BADNMDBN	240338009002	4	1	121387.5	0	0	4	324
91	BADNMDBN	240098606001	1	2	186762.5	0	0	4	844
92	BADNMDBN	240338008002	2	0	0	3	58161	0	0
93	BADNMDBN	240338008002	1	1	121000	0	0	4	320
94	BADNMDBN	240178514002	4	3	91375	0	0	12	187
95	BADNMDBN	240178514002	4	1	117415.63	0	0	4	283
96	BADNMDBN	240338008002	2	0	0	4	56799	0	0
97	BADNMDBN	240338009002	4	0	0	4	79331	0	0
98	BADNMDBN	240338010012	3	0	0	7	117391	0	0
99	BCTWMDBT	240217523003	3	3	272603.13	0	0	4	1503
100	BCTWMDBT	240217523004	4	2	164287.5	0	0	4	612
101	BCTWMDBT	240217523004	4	2	184050	0	0	4	816
102	BCTWMDBT	240217525004	3	2	169421.88	0	0	4	665
103	BCTWMDBT	240217523004	3	3	254100	0	0	4	1312
104	BCTWMDBT	240217523004	3	2	173587.5	0	0	4	708

C&P Maryland.xls
distribution output by cluster

	C	D	E	AC	AD	AE	AF	AG	AL
1	wire center	CBG number	quadrant	number of high-density RTs	high-density RT investment	number of low-density DLC RTs	and T1 road terminal and repeater investment	fiber strands required	number of DLC lines
105	BCTWMDBT	240217525004	3	2	175525	0	0	4	728
106	BLARMDBL	240253038004	3	0	0	0	0	0	0
107	BLARMDBL	240253031001	2	3	268394.44	0	0	4	1642
108	BLARMDBL	240253031004	1	2	203252.78	0	0	4	1141
109	BLARMDBL	240253032014	2	2	178366.67	0	0	4	852
110	BLARMDBL	240253031001	2	2	180950	0	0	4	882
111	BLARMDBL	240253034001	4	2	201875	0	0	4	1125
112	BLARMDBL	240253034001	4	3	268652.78	0	0	4	1645
113	BLARMDBL	240253033002	3	0	0	6	122438	0	0
114	BLARMDBL	240253035004	4	3	219704.44	0	0	8	1210
115	BLARMDBL	240253036012	1	3	228982.22	0	0	8	1244
116	BLARMDBL	240253032014	2	2	191197.22	0	0	4	1001
117	BLARMDBL	240253031003	1	0	0	7	141317	0	0
118	BLARMDBL	240253032022	3	3	230648.89	0	0	8	1259
119	BLARMDBL	240253032023	2	2	181552.78	0	0	4	889
120	BLARMDBL	240253035002	4	3	274594.44	0	0	4	1714
121	BLARMDBL	240253036029	4	3	240236.11	0	0	4	1315
122	BLARMDBL	240253035003	4	3	248847.22	0	0	4	1415
123	BLARMDBL	240253032022	3	2	206697.22	0	0	4	1181
124	BLARMDBL	240253036012	1	2	200669.44	0	0	4	1111
125	BLARMDBL	240253035001	3	2	208677.78	0	0	4	1204
126	BLARMDBL	240253036029	1	3	244197.22	0	0	4	1361
127	BLARMDBL	240253036011	1	2	199377.78	0	0	4	1096
128	BLARMDBL	240253031002	2	2	194555.56	0	0	4	1040
129	BLARMDBL	240253035003	4	3	254875	0	0	4	1485
130	BLARMDBL	240253036012	1	3	239805.56	0	0	4	1310
131	BLARMDBL	240253035003	4	3	276661.11	0	0	4	1738
132	BLARMDBL	240253038003	4	3	278727.78	0	0	4	1762
133	BLARMDBL	240253038002	3	2	198861.11	0	0	4	1090
134	BLARMDBL	240253038004	4	0	0	0	0	0	0
135	BLARMDBL	240253038006	1	3	249105.56	0	0	4	1418
136	BLARMDBL	240253038006	4	0	0	0	0	0	0
137	BLARMDBL	240253038005	2	2	202650	0	0	4	1134
138	BLARMDBL	240253038004	3	0	0	0	0	0	0

ATTACHMENT X

GTE
FCC Universal Service Cost Model Issues

ATTACHMENT Y

GTE
FCC Universal Service Cost Model Issues

Printout.pas

A	B	C	D	E	F	G	H	I
205		assign(title_file,'title1.txt');	reset(title_file);					
206		rewrite(outfile);						
207		for i := 1 to 53 do						
208		begin						
209		readln(title_file,title_vec^[i]);						
210		write(outfile,title_vec^[i],',');						
211		end;						
212		read(title_file,title_vec^[54]);						
213		writeln(outfile,title_vec^[54]);						
214		dispose(title_vec);						
215		end; { if IOResult <> 0}						
216								
217		denom := zero;						
218		for i := 1 to num_SAs do denom := denom+SA_array^[i]^DistToSwitch*SA_array^[i]^lines;						
219								
220		for i := 1 to num_SAs do						
221		begin						
222		FeedAllocation := SA_array^[i]^lines*SA_array^[i]^DistToSwitch/denom;						
223		AllocFeedCost := FeedAllocation*tot_feedcost;						
224		grid_investment := SA_array^[i]^Grid_Distribution_Cost+						
225		SA_array^[i]^fiber_terminal_cost+						
226		SA_array^[i]^t1_terminal_cost+						
227		SA_array^[i]^secondary_tterm_cost+						
228		SA_array^[i]^interface_cost+						
229		SA_array^[i]^drop_cost+						
230		SA_array^[i]^nid_cost+						
231		SA_array^[i]^drop_terminal_cost+						
232		AllocFeedCost;						
233								
234		tmp := structure_cost_fn(SA_array^[i]^lines,0,SA_array^[i]^density,						
235		SA_array^[i]^hardness,						
236		SA_array^[i]^DepthToBedrock, SA_array^[i]^SoilTextureImpact,						
237		SA_array^[i]^MinSlope, SA_array^[i]^MaxSlope,						
238		SA_array^[i]^WaterTb,						
239		0,1,0,us,bs,as,mh,pct_udg,pct_bur,pct_aer);						
240								
241								
242		write(outfile, ' , ', {company, OC indicator }						
243		CLLI,';', { wire center }						
244	*	i,';', { CBG number } *)						
245		SA_array^[i]^CBG,';						
246		SA_array^[i]^quadrant,';', { quadrant }						
247		FeedAllocation*FeederRoadDistance*1000.0:6:4,';', { allocated route distance for f						
248		'0,'; { subfeeder road distance }						
249		SA_array^[i]^RoadDistance*1000.0:6:4,';', { route distance for distribution, feet }						
250		SA_array^[i]^lines:1:0,';', { total lines }						
251		SA_array^[i]^density:6:4,';						
252		SA_array^[i]^area:6:4,';', { area }						
253		SA_array^[i]^BusLines:1:0,';', { business lines }						
254		SA_array^[i]^ResLines:1:0,';', { res lines }						
255	{ individual SA lines }	SA_array^[i]^SoclAccessLines:1:0,'..'						

HAI 5.0a Default C&P, Maryland			
Distribution Output by Cluster			Feeder Output by Cluster
wire center	CBG number	main feeder distance, ft	subfeeder cable distance, ft
			feeder distance

ABRDMMDAB	240253029022	3,194	622	3,816
ABRDMMDAB	240253029013	4,815	1,956	3,576
ABRDMMDAB	240253025009	15,642	9,646	20,474
ABRDMMDAB	240253025009	18,619	1,756	4,733
ABRDMMDAB	240253029014	1,582	1,531	3,113
ABRDMMDAB	240253028013	5,282	823	4,523
ABRDMMDAB	240253063001	8,766	6,664	10,148
ABRDMMDAB	240253063001	12,926	522	4,682
ABRDMMDAB	240253063002	15,557	4,432	7,062
ABRDMMDAB	240253029021	1,503	1,224	2,727
ABRDMMDAB	240253028021	3,218	1,403	3,118
ABRDMMDAB	240253028023	5,946	2,514	5,242
ABRDMMDAB	240253028012	8,927	6,392	9,372
ABRDMMDAB	240253024001	9,558	5,661	6,292
ABRDMMDAB	240253029023	4,171	1,558	5,729
ABRDMMDAB	240253024002	13,163	3,993	12,986
ABRDMMDAB	240253017001	19,464	8,064	14,365
ABRDMMDAB	240253017003	21,936	13,077	15,549
ABRDMMDAB	240253017003	24,637	11,281	13,983
ABRDMMDAB	240253024003	29,375	2,701	7,439
ACDNMDAC	240230001002	7,679	1,391	9,069
ACDNMDAC	240230005002	13,301	9,179	14,801
ACDNMDAC	240230001002	13,658	4,601	18,259
ACDNMDAC	240230001002	21,649	4,468	12,458
ACDNMDAC	240230001002	5,720	1,345	7,066
ACDNMDAC	240230001003	27,180	6,492	33,672
ACDNMDAC	240230001003	33,833	15,971	22,623
ALTWMDAT	240338012043	4,577	3,748	8,324
ALTWMDAT	240338012032	7,189	992	3,604
ALTWMDAT	240338014011	2,422	45	2,467

FCC Model (2-2-99) Default C&P, Maryland			
Distribution Output by Cluster			Feeder Output by Cluster
wire center	CBG number	main feeder distance, ft	subfeeder cable distance, ft
			feeder distance

ABRDMMDAB	240253029021	15,918	0	32,000
ABRDMMDAB	240253025009	14,524	0	31,058
ABRDMMDAB	240253017001	22,345	0	14,396
ABRDMMDAB	240253011022	7,100	0	13,510
ABRDMMDAB	240253063001	5,751	0	33,469
ABRDMMDAB	240253022001	3,795	0	23,178
ABRDMMDAB	240253024002	20,983	0	9,206
ABRDMMDAB	240253063001	6,470	0	11,803
ABRDMMDAB	240253029023	5,946	0	10,694
ABRDMMDAB	240253028023	9,365	0	12,497
ABRDMMDAB	240253028013	9,132	0	13,212
ABRDMMDAB	240253029022	15,000	0	12,803
ABRDMMDAB	240253028023	11,610	0	17,225
ALTWMDAT	240338012041	11,843	0	12,350
ALTWMDAT	240338013041	11,370	0	12,989
ALTWMDAT	240338013041	7,468	0	14,116
ALTWMDAT	240338014012	5,686	0	13,711
ALTWMDAT	240338012043	8,107	0	18,674
ALTWMDAT	240338012033	5,907	0	15,367
ALTWMDAT	240338012041	12,645	0	17,020
ALTWMDAT	240338012032	7,087	0	17,040
ALTWMDAT	240338014011	9,270	0	13,410
ALTWMDAT	240338014011	8,279	0	13,288
ALTWMDAT	240338019014	7,004	0	14,238
ARBTMDAR	245102501032	4,440	0	13,985
ARBTMDAR	240054306002	3,403	0	18,731
ARBTMDAR	245102804032	7,515	0	15,149
ARBTMDAR	240054307003	3,338	0	3,382
ARBTMDAR	245102804031	5,335	0	15,800
ARBTMDAR	245102501012	826	0	4,835

HAI 5.0a Default C&P, Maryland				
Distribution Output by Cluster			Feeder Output by Cluster	
wire center	CBG number	main feeder distance, ft	subfeeder cable distance, ft	feeder distance
ALTWMDAT	240338014011	6,243	2,975	6,796
ALTWMDAT	240338012042	7,079	3,020	3,856
ALTWMDAT	240338012031	10,836	8,744	12,501
ALTWMDAT	240338019014	11,055	4,335	4,554
ALTWMDAT	240338012041	14,028	4,780	7,753
ALTWMDAT	240338012041	15,497	7,121	8,591
ALTWMDAT	240338014012	6,348	1,791	8,139
ALTWMDAT	240338013041	7,613	125	7,738
ALTWMDAT	240338014012	8,883	4,617	5,887
ALTWMDAT	240338014012	10,479	6,920	8,515
ALTWMDAT	240338013042	13,315	2,837	5,673
ANNPMDAN	240037061013	668	112	780
ANNPMDAN	240037061011	1,783	924	2,038
ANNPMDAN	240037063004	2,829	164	1,210
ANNPMDAN	240037063001	3,929	1,271	2,371
ANNPMDAN	240037063002	4,838	2,526	3,434
ANNPMDAN	240037063004	4,913	1,465	1,540
ANNPMDAN	240037063002	6,024	4,891	6,002
ANNPMDAN	240037063005	6,516	477	969
ANNPMDAN	240037063007	9,639	3,292	6,415
ANNPMDAN	240037026002	15,182	7,847	13,390
ANNPMDAN	240037026005	17,819	14,252	16,889
ANNPMDAN	240037061011	932	135	1,067
ANNPMDAN	240037061011	1,485	28	582
ANNPMDAN	240037061011	1,568	1,365	1,448
ANNPMDAN	240037061012	674	281	956
ANNPMDAN	240037066003	2,147	510	1,982
ANNPMDAN	240037066003	3,263	678	1,795
ANNPMDAN	240037066002	4,033	1,513	2,283

FCC Model (2-2-99) Default C&P, Maryland				
Distribution Output by Cluster			Feeder Output by Cluster	
wire center	CBG number	main feeder distance, ft	subfeeder cable distance, ft	feeder distance
ARBTMDAR	240054306001	3,164	0	18,731
ARBTMDAR	240054001001	1,128	0	18,560
ARBTMDAR	240054304003	4,519	0	17,385
ARBTMDAR	240054302001	6,255	0	15,625
ARBTMDAR	245102502053	6,552	0	4,233
ARBTMDAR	240054016029	4,277	0	23,048
ARBTMDAR	240054307005	4,266	0	19,466
ARBTMDAR	245102008002	4,372	0	18,345
ARBTMDAR	240054304003	4,494	0	19,108
ARBTMDAR	240054307001	4,482	0	23,049
ARBTMDAR	240054302002	3,724	0	14,672
ARBTMDAR	240054304003	4,102	0	16,892
ARBTMDAR	245102502054	6,768	0	13,768
ARBTMDAR	240054302001	3,193	0	16,990
ARBTMDAR	240054308001	4,288	0	14,507
ARBTMDAR	240054309004	5,734	0	17,447
ARBTMDAR	245102503032	4,950	0	18,262
ARBTMDAR	245102502063	5,386	0	17,173
ARBTMDAR	245102502063	2,941	0	15,671
ARBTMDAR	240054309001	584	0	14,664
ARBTMDAR	245102502061	4,755	0	13,783
ARBTMDAR	245102008001	3,460	0	1,243
ARBTMDAR	245102502064	3,132	0	1,945
ARBTMDAR	245102501022	367	0	5,211
ARBTMDAR	240054309003	515	0	3,637
ARBTMDAR	245102501031	670	0	17,994
ARBTMDAR	245102501034	1,065	0	16,799
ARBTMDAR	240054304002	1,328	0	15,339
ARBTMDAR	240054305002	3,988	0	20,697

Corp Ops Exp Oper Attn -x retail uncoll.

(X) $=4.02*12*(1+'96 Actuals'!F114)/(1-'96 Actuals'!F139-'96 Actuals'!F141)$

0.10 0.05

(Z) $=6.02*12*(1+'96 Actuals'!F113)/(1-'96 Actuals'!F138-'96 Actuals'!F140)$

0.1040

Variable Overhead

Per Line Worksheet

HDI WSC &

DZ Expense

Modules